IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) Apparatus for remotely charging and storing energy to operate a tool positioned in a well, comprising:

a tool body having a central bore formed therethrough;

a moveable piston arranged in the tool body;

a spring arranged in the tool body, the spring adapted to engage the piston; and

a latching mechanism adapted to selectively lock the piston to the tool body in a first latched position during movement downhole, wherein energy is charged by moving the piston to compress the spring to a point of equilibrium with the wellbore pressure, and further wherein additional energy is stored by forcing the piston to further compress the spring beyond the point of equilibrium and then locking the piston once the spring is further compressed.

2. (Original) The apparatus of claim 1, wherein the piston is adapted to be moved by differential pressure between the well and the spring.

3. (Original) The apparatus of claim 2, wherein the spring comprises:

a gas chamber formed in the tool body; and

a compressible gas located in the gas chamber.

4. (Original) The apparatus of claim 3, wherein the piston is arranged in the gas chamber.

5. (Original) The apparatus of claim 3, wherein the gas comprises nitrogen.

6. (Original) The apparatus of claim 2, wherein the spring comprises:

a mechanical spring.

7. (Previously presented) An actuator for use in a wellbore, comprising:

a tool body having a bore and a gas chamber formed therein, the gas chamber adapted to hold a compressible gas, the bore adapted to receive a fluid;

a moveable piston arranged in the gas chamber, the piston dividing the gas chamber into two portions;

a latching mechanism that selectively prevents the piston from moving; and

a port providing fluid communication between the bore and one portion of the gas chamber,

wherein the actuator is charged with energy downhole by moving the piston to compress the gas in the gas chamber beyond an equilibrium with normal pressure in the wellbore.

8. (Original) The actuator of claim 7, further comprising:

a sleeve arranged in the tool body for defining the bore and the gas chamber.

9. (Original) The actuator of claim 8, wherein the latching mechanism comprises:

a ratchet formed on the piston; and

a mating surface formed on the sleeve, the mating surface adapted to engage the piston and selectively lock the piston to the sleeve.

10. (Original) The actuator of claim 7, further comprising a second latching mechanism, the second latching mechanism comprising:

a latching finger formed on the piston; and

a recess formed in the tool body for receiving the latching finger to selectively latch the piston to the tool body.

11. (Original) The actuator of claim 7, wherein the compressible gas comprises nitrogen.

12. (Original) The actuator of claim 7, wherein the pressure in the wellbore is the differential pressure between pressure of the gas in the gas chamber and pressure of the fluid in the bore.

13. (Original) The actuator of claim 7, wherein the latching mechanism comprises a shearing mechanism adapted to selectively release the piston at a predetermined pressure.

14. (Original) The actuator of claim 7 wherein the piston comprises a rupture disk adapted to break and release the piston at a predetermined pressure.

15. (Original) The actuator of claim 14, wherein the latching mechanism comprises a shearing mechanism adapted to selectively release the piston at a predetermined pressure.

16. (Original) The actuator of claim 7, wherein tool body is connected to a downhole tool.

17. (Original) The actuator of claim 16, wherein the downhole tool is a valve.

18. (Currently amended) A method for energizing a tool in a well, comprising:

lowering the tool into the well, the tool having a spring to actuate the tool, the spring being exposed to wellbore pressure;

compressing the spring, while in the well, to a maximum compressed state in which the spring exerts a greater force than that applied by the wellbore pressure; and

holding the spring member in the maximum compressed state to store energy.

19. (Original) The method of claim 18, wherein the spring member is a gas spring.

20. (Original) The method of claim 18, wherein the spring member is a mechanical spring.

21. (Original) The method of claim 18, further comprising:
using the stored energy to actuate the tool by decompressing the spring.

22. (Original) The method of claim 21, wherein the tool is a valve.

23. (Currently amended) A method, comprising:
running a tool in a well;
latching a piston in the tool at a first latched position for movement downhole;
using pressure in the well to move a piston in the tool to compress a gas, trapped in the tool, to a point of equilibrium with the hydrostatic pressure of the well;
subsequently moving the piston an additional distance to further compress the gas;
locking the piston in the tool to prevent the gas from decompressing; and
using the compressed gas to actuate the tool.

24. (Original) The method of claim 23, wherein locking the piston is achieved by ratcheting the piston to an inner sleeve in the tool.

25. (Currently amended) A method for actuating a valve in a well, the method comprising:
connecting the valve to an actuator;
running the valve downhole such that the actuator is exposed to wellbore pressure;
while downhole, compressing a gas acting on the actuator in a direction opposing the wellbore pressure, the gas ~~spring~~ being compressed to a point beyond equilibrium between the gas ~~spring~~ and the wellbore pressure;
holding the gas in a maximum compressed state to store energy in the actuator for actuating the valve; and

decompressing the gas to actuate the valve.

26. (Original) The method of claim 25, wherein compressing the gas is achieved by moving a piston in the actuator.

27. (Original) The method of claim 23, wherein holding the gas in a compressed state is achieved by ratcheting the piston to an inner sleeve in the actuator.

28. (Currently amended) A method for actuating a valve in a well, the method comprising:

connecting the valve to an actuator;

running the valve downhole such that the actuator is exposed to wellbore pressure;

while downhole, compressing a mechanical spring that biases the actuator in a direction opposing the wellbore pressure, the mechanical spring being compressed to a point beyond equilibrium between the mechanical spring and the wellbore pressure;

holding the mechanical spring in a maximum compressed state to store energy in the actuator for actuating the valve; and

decompressing the mechanical spring to actuate the valve.

29. (Currently amended) An energy storage apparatus for receiving and storing an energy charge for actuating a downhole tool arranged in a wellbore, the energy storage apparatus comprising:

a body connectable to the downhole tool;

a sleeve arranged within the body, the sleeve defining a central bore and a chamber;

a moveable piston arranged in the chamber, the piston dividing the chamber into two portions;

a port adapted to communicate well fluid from the bore to one portion of the chamber;

a compressible gas arranged in the other portion of the chamber, the gas being compressible by the piston; and

a ~~ratcheting~~ mechanism to selectively hold the piston in a plurality of positions, including a position when ~~to compress~~ the gas is compressed, the ~~ratcheting~~ mechanism adapted to release the piston at a predetermined pressure.

30. (Original) The apparatus of claim 29, further comprising:

a latching mechanism to selectively hold the piston to prevent the piston from moving during initial running of the downhole tool in the wellbore, the latching mechanism adapted to release the piston at a predetermined pressure.